

Claims

1. A resonance and/or vibration measurement device comprising an elongate member, resonance and/or vibration measuring means and processing means, in which the resonance and/or vibration measuring means records resonance and/or vibration of the elongate member caused by the striking of a material in use, and the processing means is adapted to identify a predetermined characteristic of the material from the recorded resonance and/or vibration measurement.
2. A resonance and/or vibration measurement device as claimed in Claim 1 in which the processing means is provided with a database of measurements, and in which the processing means is adapted to identify a predetermined characteristic of the material struck in use by comparing the recorded measurement taken in use with measurements stored in the database.
3. A resonance and/or vibration measurement device as claimed in Claim 2 in which the processing means is adapted to be able to store recorded measurements taken in use in the database, such that subsequent recorded measurements taken in use can be compared with them.
4. A resonance and/or vibration measurement device as claimed in Claim 2 or 3 in which the processing means is adapted to identify a predetermined physical characteristic of the material from the recorded measurement taken in use.
5. A resonance and/or vibration measurement device as claimed in Claim 2 or 3 in which the processing means is adapted to match the recorded measurement taken in use with a recorded measurement stored in the database.
6. A resonance and/or vibration measurement device as claimed in Claim 5 in which the processing means is adapted to match one or more predetermined characteristics of the recorded measurement taken in use with the corresponding

one or more predetermined characteristics of a recorded measurement stored in the database.

7. A resonance and/or vibration measurement device as claimed in Claim 6 in which the processing means is adapted to find a match if the one or more predetermined characteristics of the recorded measurement taken in use are within a predetermined tolerance range of the corresponding one or more predetermined characteristics of a recorded measurement stored in the database.

8. A resonance and/or vibration measurement device as claimed in Claim 7 in which the processing means is provided with MIDI signal creation means, and in which a predetermined MIDI signal is created when the processing means finds a match in use.

9. A resonance and/or vibration measurement device as claimed in Claim 8 in which one or more predetermined characteristics of the MIDI signal created are determined by the location of the one or more predetermined characteristics of the recorded measurement taken in use within said predetermined tolerance range.

10. A resonance and/or vibration measurement device as claimed in Claim 9 in which the device is provided with means to record one or a sequence of MIDI signals created in use, and/or means to convert one or a sequence of MIDI signals created in use into an audio signal, and to relay and/or record the MIDI and/or audio signal.

11. A resonance and/or vibration measurement device as claimed in any of Claims 5 - 10 in which the elongate member is a drum stick or a pair of drumsticks.

12. A resonance and/or vibration measurement device as claimed in Claim 11 in which the vibration measuring means is one or more elongate strips of piezoelectric quartz crystal in contact with the drum stick, or each of the pair of drum sticks, and in which the recorded measurement taken in use is an electric signal created by the

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piezoelectric quartz crystal when the drum stick or one of the drum sticks strikes a material in use and resonates and/or vibrates.

13. A resonance and/or vibration measurement device as claimed in Claim 12 in which the one or more elongate strips of piezoelectric quartz crystal are mounted inside the shaft of the drum stick, or each of the pair of drum sticks.

14. A resonance and/or vibration measurement device as claimed in Claim 13 in which the one or more elongate strips of piezoelectric quartz crystal are connected to the processing means by electric signal wires.

15. A resonance and/or vibration measurement device as claimed in any of the preceding Claims in which the processing means is a computer program run on a computer and in which the computer program comprises a controlling sub program, a resonance and/or vibration measurement database, a MIDI signal database and a MIDI signal generation sub program.

16. A resonance and/or vibration measurement device according to Claim 15 in which the device is provided with proximity measuring means adapted to identify the location of the drum stick or one of the drum sticks, in relation to a predetermined point in space, and in which one or more of the predetermined characteristics of the MIDI signal created in use are determined by the location of the drum stick or one of the drum sticks in relation to the predetermined point when they strike the material.

17. A resonance and/or vibration measurement device comprising resonance and/or vibration measuring means adapted to be fitted to an elongate member with which the device is to be used, and processing means, in which the resonance and/or vibration measuring means records resonance and/or vibration of the elongate member with which it is used caused by the striking of a material in use, and the processing means is adapted to identify a predetermined characteristic of the material from the recorded resonance and/or vibration measurement.

18. A resonance and/or vibration measurement device substantially as described herein and as shown in the accompanying drawing.

19. A method of using a resonance and/or vibration measurement device according to Claim 8, including the steps of:

- 1)** Striking a material with the elongate member, causing the elongate member to resonate and/or vibrate such that a recorded measurement is taken by the resonance and/or vibration measuring means.
- 2)** Storing the recorded measurement or one or more predetermined characteristics of the recorded measurement, in the database.
- 3)** Determining a MIDI signal to be associated with the material struck in step 1).
- 4)** Repeating steps 1) to 3) a desired number of times with different materials, until a desired number of recorded measurements are stored in the database.
- 5)** Striking any of the different materials struck with the elongate member during the performance of a step 1), causing the elongate member to resonate and/or vibrate such that a recorded measurement is taken by the resonance and/or vibration measuring means.
- 6)** Referring the recorded measurement taken in step 5) to those stored in the database in step 2) to find a match.
- 7)** Creating the MIDI signal determined in step 3), according to the match made in step 6).

20. A method according to Claim 19 in which the elongate member comprises two drum sticks, and steps 1) to 4) are repeated separately for each drum stick, and in which the processing means is adapted to differentiate between the recorded measurements taken by each of the drum sticks in use.